



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/494,211 01/25/00 WOO

I 003364.F035

EXAMINER

IM22/0613

Blakely Sokoloff Taylor & Zafman LLP
12400 Wilshire Boulevard
7th Floor
Los Angeles CA 90025

DOVE, T

ART UNIT

PAPER NUMBER

1745

DATE MAILED:

06/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/494,211

Applicant(s)
Woo et al.

Examiner
Tracy Dove

Art Unit
1745



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 Jan 2000
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other:

Art Unit: 1745

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority. It is noted, however, that applicant has not filed any certified copies of the priority documents as required by 35 U.S.C. 119(b).

Specification

The disclosure is objected to because of the following informalities: on page 3, line 24- page 4, line 1 the specification states "may be produced by dissolving an active material into or from which lithium ions are intercalated", which is confusing. It is unclear what applicant is attempting to disclose.

Appropriate correction is required.

Claim Objections

Claim 3 is objected to because of the following informalities: in lines 3 and 5 "coding" should be "coating". Furthermore, lines 13-16 should be deleted because they contain the same limitations as lines 17-20. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 1745

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the metal oxides" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Claims 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Idota et al.,
US 6,235,427 B1.

Idota teaches a lithium secondary battery having a negative electrode, a positive electrode, a separator provided between the negative and positive electrodes, and an electrolyte. See abstract. The negative electrode includes a current collector and an active material. The negative active material includes a carbonaceous material. See col. 7, lin 49-56. The positive electrode

Art Unit: 1745

includes a current collector and an active material. The positive active material may preferably be a lithium-transition metal oxide. See col. 9, lin 51-53. The current collectors can be foil expanded metal, punched metal or net. Suitable examples of the materials for the negative current collector include copper, stainless steel, nickel, titanium, and *alloys thereof*. Copper foil is preferred. The foil as a current collector preferably has a thickness of 7-100 μm , especially 7-20 μm .

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al., US 5,702,845 in view of Idota et al., US 6,235,427 B1.

Kawakami teaches a lithium secondary battery having a negative electrode, a positive electrode, a separator provided between the negative and positive electrodes, and an electrolyte. See abstract. The negative electrode includes a current collector and an active material. The negative active material may preferably be a carbonaceous material. See col. 7, lin 62-66. The positive electrode includes a current collector and an active material. The positive active

Art Unit: 1745

material may preferably be a lithium-transition metal oxide. See col. 7, lin 44-47. The current collector materials are those that are highly conductive and inactive to the battery reaction. Examples of desirable materials include nickel, titanium, copper, aluminum, stainless-steel, platinum, palladium, gold, zinc, various alloys, and *a complex metal comprising at least two kinds of the above materials*. The shape of the current collectors may be plate, foil, mesh, sponge, fibrous, punched metal, expanded metal or the like. See col. 8, lin 37-52. Note col. 9, lin 3-4 which teaches the materials and shapes of the negative collector are also similar to those for the positive collector.

Kawakami does not explicitly state the current collector has a thickness of 20 μm or less.

However, Idota teaches a lithium secondary battery having a negative electrode current collector of metal foil. The current collector foil has a thickness of 7-100 μm , especially 7-20 μm .

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because negative current collector foils having a thickness of less than 20 μm are known in the art. One of skill would be motivated to combine the teachings of Kawakami and Idota because both references teach lithium batteries having negative electrode current collector foils. The materials for the negative current collector of Kawakami are similar to the materials for the negative current collector of Idota.

Regarding claim 2, the skilled artisan would have considered it obvious to add a minor amount of nickel or titanium to the copper foil material. Kawakami teaches that when copper is

Art Unit: 1745

used alone, copper may be dissolved and deposited on the other electrode. Thus, copper is desirably used after being coated with a more inactive metal, such as nickel or titanium. Thus, the skilled artisan would know that it is desirable to have a current collector consisting mainly of copper (highly conductive) with a minor amount of nickel or titanium (less reactive under battery conditions than copper).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dasgupta et al. 5,464,706 teaches a lithium battery having a current collector made of stainless steel, iron-nickel alloys, copper foil, aluminum and similar relatively inexpensive metals. See col. 1, lin 23-40.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached *Monday, Wednesday & Thursday from 7:30 AM - 7:00 PM*. My supervisor is Gabrielle Brouillette, who can be reached at (703) 308-0756. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax number is (703) 305-3599.

June 11, 2001


GABRIELLE BROUILLETTE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700